

bus seems to have continued until modern times in various quarters of the globe; so at least the writer is informed by Dr. E. W. Gudger, who has collected a number of reports to that effect.

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CERTAIN FAMILIAR STRUCTURAL ADAPTATIONS IN FISHES.

That habit and structure are correlated will be questioned by no student of evolution. That habit determines structure would probably be less widely conceded. If it does so, specialized structures would be expected to arise among fishes already possessing habits to take advantage of them; we would expect to find the habit served by a fish's peculiar structure, shared also, to some degree, by its relatives which lack the structure; and notable cases where this expectation is realized are evidence that structure is determined by habit.

Some such cases come to mind. The sailfish, remarkable for its great expanse of dorsal fin, is said to come to the surface of the sea with the fin out of water, functioning as a sail in the wind. The sword-fish and mackerel, its allies, are surface fishes, the sword-fish at least often swims with its back-fin out of water.

The prehensile tail of the sea-horse with which it coils around and holds fast to sea-weed is a structure unique among fishes. The pipe-fishes, its nearest allies, live among sea-weed twisting their lithe bodies among and bracing their tails against the strands of weed.

The highly developed breast-fins of the flying fish which enable it to travel considerable distances through the air and elude predaceous fishes of which it is the prey, is one of the most remarkable structural adaptations to be found in the world's ichthyofauna,

and perhaps responsible for the success, measured by the abundance, of flying fishes off shore over warm seas everywhere, where they seem to outnumber the sum of all other species. Their allies, the slender, elongate needle-fishes, though lacking any wing development are noted for the habit of leaping and skipping over the surface of the water. One elongate species with a much flattened body turns on its side and skims over the surface like a skipping stone.

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RANA PALUSTRIS IN WISCONSIN.

During the early fall of 1914, three specimens of *Rana palustris* Le Conte were found in a small stream entering the south side of Lake Wingra, Dane County. These specimens were identified for the writer by Dr. A. G. Ruthven, and a specimen was deposited in the Museum of Zoology, University of Michigan. The stream in which these frogs were found is the small sluggish outlet of a large swamp situated about a half mile from the lake. The bottom of the stream is of soft mud, without stones of any sort, and at all seasons of the year is more or less obstructed by a heavy growth of water cress. *Rana pipiens*, *Acris gryllus* and *Rana clamitans* are very commonly found here, but frequent and diligent search throughout the year previous had failed to disclose any pickerel frogs.

The distribution of this species is given by Dickerson (The Frog Book) as "over the eastern part of North America, west to the Great Plains, and north to Hudson Bay." Higley (Wisconsin Academy of Sciences, Arts and Letters, VII, 169) states that it is quite common in Michigan, and may possibly be found in Wisconsin, and in "The Herpetology of Michigan" (Mich. Geol. and Biol. Surv., Pub. 10, Biol. Ser. 3) Thompson and Thompson say that they